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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			REDDY, KARUNA P	
			ART UNIT	PAPER NUMBER
			1764	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/593,293	<b>Applicant(s)</b> BELLMANN ET AL.	
	<b>Examiner</b> KARUNA P. REDDY	<b>Art Unit</b> 1764	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25-27, 30-34, 37-40 and 42-50 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-27, 30-34, 37-40 and 42-50 is/are rejected.
- 7) ☒ Claim(s) 25, 34, 38 and 50 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### **DETAILED ACTION**

1. This office action is in response to amendment filed 8/23/2010. Claims 1-24, 28-29, 35-36, 41 are cancelled; claims 25-27, 30-34, 37-40, 42-49 are amended; and claim 50 is added. Claims 25-27, 30-34, 37-40 and 42-50 are currently pending in the application.

It is noted that claim 25 has been amended to incorporate some of the limitations regarding polymer A and polymeric dispersant B from claims 28-29 and 41. This affects the scope of those claims that had depended on claim 25 before the amendment. Thus the amendment presents claims of a scope that was not before the examiner at the time of the preceding office action. Hence, it is proper to make the present action final.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Objections***

3. Claims 27, 34, 38 and 50 are objected to because of the following informalities:

Claim 27 recites "a copolymer thereof with salts, an esters of (meth)acrylic acid" (line 9). It appears that the copolymer is with salts and esters of (meth)acrylic acid". If so, applicant is advised to rephrase it as "a copolymer thereof with salts and esters of (meth)acrylic acid".

Claim 34 recites "wherein said the ratio" (line 2) is grammatically incorrect and should read "wherein the ratio".

Art Unit: 1764

Claim 38 recites “R<sup>3</sup> stands for hydrogen” (line 21). There is no reference to R<sup>3</sup> in monomer of general formula III and there is no description of what R<sup>8</sup> in general formula III represents.

Claim 50 recites “based on the total weight the dispersion” (line 13) is grammatically incorrect and should read “based on the total weight of the dispersion”.

Appropriate clarification and/or correction are required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 37-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 37, 38 and 39 recite “wherein the polymeric dispersing agent B comprises at least one non-ionic monomer” (line 2), “wherein the polymeric dispersing agent B comprises one or more amphiphilic monomers” (lines 2-3), and “wherein the polymeric dispersing agent B comprises cationic monomers” (line 2), respectively. However, the description of cationic, non-ionic and amphiphilic monomers in the general disclosure of instant specification refers to these monomers in the context of their use in water-soluble

Art Unit: 1764

and/or water-swellaable polymer A. Hence, the reference to polymeric dispersing agent B comprising non-ionic, amphiphilic and cationic monomers is not supported by original disclosure. It appears that the claims may have been drafted to inadvertently refer to the monomers (non-ionic, cationic and amphiphilic) as part of water-soluble polymeric dispersing agent "B".

6. Claims 25, 32, 37, 43 and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 (line 15) and claim 43 (lines 4-5) recite "residual amount of said dispersing agent B." Residual amount is understood by one of ordinary skill in the art as referring to remaining amount. It is not clear wherein the process initial amount of dispersing agent B is added, since the aliquot of at least 5% by weight refers to the amount based on total dispersion, which dispersion is formed only after the polymerization is complete.

Claim 32 recites the limitation "wherein the water-soluble polymeric dispersing agent" in line 2. There is insufficient antecedent basis for this limitation in the claim since there is no reference to polymeric dispersing agent other than polymeric dispersing agent "B" in claim 25 and 31 on which this claim depends. In addition, the polymeric dispersing agents recited in claim 32 are not referred to in the context of polymeric dispersing agent "B" in the originally filed disclosure. It appears that applicant is redefining water-soluble polymeric dispersing agent as polyfunctional alcohols whereas claim 31 includes water-soluble polyfunctional alcohol as part of a mixture that comprises water-soluble polymeric dispersing agent "B" of claim 25.

Art Unit: 1764

Claim 37 (lines 7-8) recites "or an alkyl or hydroxyalkyl radical containing from 1 to 5 carbon atoms". It is not clear if 1 to 5 carbon atoms refer to the number of carbon atoms in alkyl, hydroxylalkyl radical or both of them.

Claim 50 recites "wherein the anionic polymeric dispersing agent B is the process comprising". The sentence appears to be incomplete and examiner interprets this to mean "the process comprising".

***Claim Rejections - 35 USC § 103***

7. Claims 25-27, 30, 38-39, 43-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Messner et al (US 5,480,934).

Messner et al disclose a process of preparing aqueous polymeric dispersion of low viscosity, in which the polymer has a high molecular weight by polymerizing monomers a1, a2 and optionally a3 in the presence of a polymeric dispersing agent, wherein a1 is 70 to 99 wt% of at least one water-soluble monomer, a2 is 1 to 30% of at least one hydrophobic monomer thereby forming a water-soluble polymer (A) having an average molecular weight of at least  $10^6$  Dalton (i.e. reads on molecular weight of polymer A in instant claims 25 and 50), and then adding at least one polymeric dispersing agent (D) to the aqueous dispersion (i.e. reads on adding polymeric dispersant after the polymerization in instant claims 25 and 50). Examples of monomer a1 include anionic monomers such as acrylic acid, methacrylic acid, sodium (meth)acrylate, potassium (meth)acrylate and ammonium (meth)acrylate (col. 3, lines 54-67; col. 4, lines 1-5). The aqueous dispersions can be used as flocculants and as

Art Unit: 1764

retention agent in paper production (col. 1, lines 16-20) which reads on instant claims 47-49.

The polymeric dispersing agent (D) contains at least one functional group selected from ether, hydroxyl, carboxyl, sulfone, sulfate ester, amino, amido, imino, tert-amino, and quaternary ammonium groups (i.e. reads on instant claim 26). Examples of polymers (D) include cellulose derivatives, starch, dextran, polyethylene glycol, copolymers of these with methacrylic acid (i.e. reads on instant claim 38) and others (col. 7, lines 18-51) which reads on instant claim 27. Exemplary polymeric dispersing agents (D) include derivatives quarternized with methyl chloride such as N,N-dimethylaminoethyl methacrylate (i.e. reads on instant claim 39). See example 3, wherein polymerization of 90 g acrylamide, 125 g of 2-trimethylammoniummethyl methacrylate chloride solution, 10 g of butyl acrylate monomers in 385.6 g of water in conducted in the presence of 391.4 g of 35% aqueous poly-DADMAC solution (i.e. reads on polymeric dispersant B of instant claims). Hence, it is clear the polymerization is conducted in the presence of 14% by weight of polymeric dispersant (i.e. reads on instant claims 25 and 50). Polymerization is conducted at a temperature of 53°C. The aqueous dispersion in example 3 is heated to 50°C (i.e. cooling to room temperature after polymerization is implicit in heating to 50°C after polymerizing at 53°C, and hence reads on cooling the reaction mixture in instant claims 43 and 44). To this is added 166.6 g of 40% aqueous poly-DADMAC solution (i.e. reads on adding polymeric dispersant after polymerization and cooling). The ratio of polymeric dispersant added before and after polymerization is 35% of 391.4 g and 40% of 166.6 g, respectively (i.e. 67% before polymerization and 33% after polymerization) which reads on instant claim 30 and 45.

Art Unit: 1764

Messner et al differs with respect to molecular weight of polymeric dispersant B..

However, Messner et al in the general disclosure teach that preferred polymeric dispersant agents have an average molecular weight of between  $10^4$  to  $4 \times 10^5$  Daltons (i.e. 10,000 to 400,000 Daltons). Case law holds that where claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, in light of the general disclosure in Messner and case law, it would have been obvious to one skilled in art at the time invention was made to use polymeric dispersant with a molecular weight < 250,000 Daltons (i.e. in the overlapping ranges), absent evidence of unexpected results.

8. Claims 25-27, 30-34 and 45-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hurlock (US 6,265,477 B1) in view of Aydin et al (US 5,340,859)

Hurlock et al disclose an aqueous dispersion of high molecular weight water soluble anionic or non-ionic polymer prepared by polymerizing at least one anionic monomer and at least one non-ionic monomer under free radical forming conditions in an aqueous solution of a water soluble salt in the presence of an anionic water soluble stabilizer polymer (abstract) which reads on polymeric dispersant of instant claims. The polymers are useful as flocculants and retention aids in the manufacture of paper (col. 2, lines 34-36) which read on instant claims 47-49. In preferred embodiments stabilizer is poly(acrylic acid) (col. 7, lines 23-25) which reads on carboxyl group of instant claim 26, and anionic polymer composed of at least 30% by weight of anionic monomer of instant claim 28. Preferably, from about 0.1 to about 5 percent by weight of stabilizer, based on the weight of the total dispersion is used (col. 5, lines 12-16). In addition, codispersants



Art Unit: 1764

such as water soluble polyhydric alcohols, such as polyethylene glycol can be added to the reaction mixture (col. 6, lines 11-15) which reads on polyfunctional alcohol of instant claims 31, 32 and polyalkylene glycol of instant claim 32. The codispersant is present in amounts of up to 10% by weight based on total dispersion (col. 6, lines 22-23) which in combination with stabilizer reads on wt% of instant claims 33 and the ratio of instant claim 34. In a preferred embodiment, the water-soluble polymer is poly(acrylic acid/acrylamide) which reads on polymer comprising anionic monomer (i.e. olefinically unsaturated carboxylic acid) of instant claim 25. The dispersion polymers have a molecular weight of from 1,000,000 to about 50 million (col. 7, lines 1-5) which reads on  $M_w$  of polymer A in instant claim 25.

Prior art of Hurlock is silent with reference to dilution with dispersing agent after completion of polymerization; the wt% of dispersing agent added after polymerization; differs with respect to molecular wt. of polymeric dispersant; and wt% of polymeric dispersant.

However, Aydin et al teach preparation of aqueous polymer dispersion by free-radical polymerization (abstract). Suitable surface active substances used for carrying out free radical polymerization include protective colloids. Examples of protective colloids are polyvinyl alcohols, cellulose derivatives and vinylpyrrolidone-containing polymers (col. 5, lines 28-33). Completion of the actual polymerization is followed by customary measures of post-stabilization, including the subsequent addition of surface active substances (col. 10, lines 12-18). Therefore, in light of the teachings in Aydin et al, it would have been obvious to one skilled in art at the time invention was made to post-stabilize the aqueous dispersion of Hurlock with subsequent addition of polymeric dispersant agents such as cellulose derivatives and vinylpyrrolidone-containing

Art Unit: 1764

polymers, because Aydin et al teach that it is customary to stabilize an aqueous dispersion after polymerization, and one skilled in art at the time invention was made would expect the aqueous dispersion of Hurlock to be stabilized, absent evidence to the contrary.

With respect to wt% of dispersing agent added after polymerization, it is the examiner's position that wt% of dispersing agent added after polymerization is a result-effective variable (MPEP 2144.5) since the amount used clearly affects the stability of water-in-water dispersion. Hence, the choice of a particular amount of dispersing agent (such as the amount in present claims) is a matter of routine experimentation and would have been well within the skill level of, and thus obvious to, one of ordinary skill in the art.

With respect to molecular weight of polymeric dispersing agent, Hurlock in the general disclosure teaches that molecular weight of stabilizer is from 100,000 to about 5,000,000 (col. 4, lines 56-58). Case law holds that where claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, in light of teachings in general disclosure of Hurlock and the case law, it would have been obvious to one skilled in art at the time invention was made to use a polymeric dispersant with instantly claimed molecular weight of not more than 250,000 g/mol, absent evidence of unexpected results.

With respect to wt% of polymeric dispersant, Hurlock in the general disclosure teaches that stabilizer is preferably used in amounts of from about 0.1 to about 5% by weight (col. 5, lines 12-16). Case law holds that term "about" permits some tolerances. See *In re Ayers*, 154 F.2d 182, 69 USPQ 109 (CCPA 1946). In addition, it has been

Art Unit: 1764

held that a case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. See *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Therefore, in light of the general disclosure of Hurlock and case laws, it would have been obvious to one skilled in art at the time invention was made to use polymeric dispersant in amounts of about 5% by weight.

9. Claims 25-26, 31-32, 40, 42, 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Selvarajan et al (US 5,837,776 B1) in view of Aydin et al (US 5,340,859).

Selvarajan et al disclose aqueous dispersions of water-soluble anionically charged addition polymers obtained by polymerizing in the presence of an anionically charged water-soluble polymer stabilizer (abstract). See example 2, wherein the stabilizer is polyacrylamidomethylpropane sulfonic acid (i.e. reads on polymeric dispersing agent B comprising at least 30% by weight of anionic monomers in instant claims 25 and 50) and is used in the preparation of polymeric dispersion in example 3. The dispersion polymer in example 3 comprises acrylic acid (i.e. reads on olefinically unsaturated carboxylic acid of instant claims 25 and 50) and is prepared in the presence of 12 g of glycerol (i.e. reads on polyfunctional alcohol of instant claims 31 and 32) and 30 g of 15% polyacrylamidomethylpropane sulfonic acid (i.e. reads on polymeric dispersant agent B of instant claims 25, 50 and the sulfone group of instant claim 26). See example 12, wherein dispersion of a homopolymer of acrylic acid is prepared in the presence of polymeric stabilizer of example 1 (i.e. reads on the monomer composition consisting of anionic monomers of instant claim 40). The dispersion polymer preferably

Art Unit: 1764

has a lower molecular weight of about 1,000,000 to as high as possibly attainable while remaining water soluble (col. 7, lines 12-16) which reads on instant claim 25 and 50.

The polymers are useful as flocculants, retention and drainage aids in the manufacture of paper (col. 1, lines 15-18).

Selvarajan et al are silent with respect to dilution with dispersing agent after completion of polymerization; the wt% of dispersing agent added after polymerization; differs with respect to molecular wt. of polymeric dispersant; wt% of polymeric dispersant; and wt% of salt.

However, Aydin et al teach preparation of aqueous polymer dispersion by free-radical polymerization (abstract). Suitable surface active substances used for carrying out free radical polymerization include protective colloids. Examples of protective colloids are polyvinyl alcohols, cellulose derivatives and vinylpyrrolidone-containing polymers (col. 5, lines 28-33). Completion of the actual polymerization is followed by customary measures of post-stabilization, including the subsequent addition of surface active substances (col. 10, lines 12-18). Therefore, in light of the teachings in Aydin et al, it would have been obvious to one skilled in art at the time invention was made to post-stabilize the aqueous dispersion of Selvarajan et al with subsequent addition of polymeric dispersant agents such as cellulose derivatives and vinylpyrrolidone-containing polymers, because Aydin et al teach that it is customary to stabilize an aqueous dispersion after polymerization, and one skilled in art at the time invention was made would expect the aqueous dispersion of Selvarajan et al to be stabilized, absent evidence to the contrary.

With respect to wt% of dispersing agent added after polymerization, it is the examiner's position that wt% of dispersing agent added after polymerization is a result-

Art Unit: 1764

effective variable (MPEP 2144.5) since the amount used clearly affects the stability of water-in-water dispersion. Hence, the choice of a particular amount of dispersing agent (such as the amount in present claims) is a matter of routine experimentation and would have been well within the skill level of, and thus obvious to, one of ordinary skill in the art.

With respect to molecular weight of polymeric dispersing agent, Selvarajan et al in the general disclosure teach that molecular weight of stabilizer is from 100,000 to about 5,000,000 (col. 5, lines 2-4). Case law holds that where claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, in light of teachings in general disclosure of Selvarajan and the case law, it would have been obvious to one skilled in art at the time invention was made to use a polymeric dispersant with instantly claimed molecular weight of not more than 250,000 g/mol, absent evidence of unexpected results.

With respect to wt% of polymeric dispersant, Hurlock in the general disclosure teaches that stabilizer is preferably used in amounts of from about 0.1 to about 5% by weight (col. 4, lines 66-67). Case law holds that term "about" permits some tolerances. See *In re Ayers*, 154 F.2d 182, 69 USPQ 109 (CCPA 1946). In addition, it has been held that a case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. See *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Therefore, in light of the general disclosure of Selvarajan and case laws, it would have been obvious to one skilled in art at the time

Art Unit: 1764

invention was made to use polymeric dispersant in amounts of at least 5% by weight, absent evidence to the contrary.

With respect to salt, Selvarajan et al teach in the general disclosure that salt is present in amount of from about 2 to about 40 percent by weight based on the total dispersion (col. 5, lines 60-62). The use of salts containing di- or tri-valent anions generally results in polymer dispersions having lower percentages of salt materials as compared to salts containing monovalent anions (col. 6, lines 16-18). When using higher quantities of monomer less salt will be required (col. 6, lines 27-28). Case law holds that where claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, in light of the general disclosure in Selvarajan et al and case law, it would have been obvious to one skilled in art at the time invention was made to use salts in amounts of less than 3% by weight because Selvarajan et al teach that lower amounts of salt can be used in the preparation of water-soluble polymer dispersion when monomers are used in higher quantities and use of salts containing di- or tri-valent anions generally result in polymer dispersions having lower percentage of salts.

10. Claims 25-26, 37, 40 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 5,985,992) in view of Aydin et al (US 5,340,859).

Chen discloses aqueous dispersions of anionic water-soluble or water-swellaable polymers (abstract). See example 1C, wherein polymeric dispersant comprises 5 mole% acrylamide (non-ionic monomer) and 95 mole% acrylic acid (anionic monomer) (i.e. reads on polymeric dispersing agent having at least 30% by weight of anionic monomer in instant claims 25, 50, and non-ionic monomer of instant claim 37). The

Art Unit: 1764

molecular weight of aqueous dispersion is preferably greater than 1 million (i.e. reads on molecular weight of polymer A in instant claims 25 and 50). See example 7-9, wherein acrylic acid, methacrylic acid (i.e. both read on olefinically unsaturated carboxylic acid instant claims 25, 50 and carboxyl group instant claim 26) and sodium 2-acrylamido-2-methyl-1-propanesulfonate (i.e. reads on alkali metal salt of olefinically unsaturated sulfonic acid of instant claims 25, 50 and sulfone group of instant claim 26) are polymerized in the presence of polymeric dispersant. The anionic polymer may contain 100 mole% anionic recurring unit (col. 5, lines 13-14) which reads on instant claim 40.

Chen is silent with respect to dilution with dispersing agent after completion of polymerization, and differs with respect to molecular weight of polymeric dispersant B and wt% of polymeric dispersant.

However, Aydin et al teach preparation of aqueous polymer dispersion by free-radical polymerization (abstract). Suitable surface active substances used for carrying out free radical polymerization include protective colloids. Examples of protective colloids are polyvinyl alcohols, cellulose derivatives and vinylpyrrolidone-containing polymers (col. 5, lines 28-33). Completion of the actual polymerization is followed by customary measures of post-stabilization, including the subsequent addition of surface active substances (col. 10, lines 12-18). Therefore, in light of the teachings in Aydin et al, it would have been obvious to one skilled in art at the time invention was made to post-stabilize the aqueous dispersion of Chen with subsequent addition of polymeric dispersant agents such as cellulose derivatives and vinylpyrrolidone-containing polymers, because Aydin et al teach that it is customary to stabilize an aqueous dispersion after polymerization, and one skilled in art at the time invention was made

Art Unit: 1764

would expect the aqueous dispersion of Chen to be stabilized, absent evidence to the contrary.

With respect to the molecular weight of polymeric dispersant B, Chen teaches in the general disclosure that dispersant has a greater solubility than the water-soluble polymer and greater solubility generally results from lower molecular weight (col. 8, lines 44-46). Dispersant molecular weights are generally greater than 10,000 but smaller than 3,000,000. Case law holds that where claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. See *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, in light of the general disclosure in Chen and case law, it would have been obvious to one skilled in the art to use the overlapping molecular weight lower than 250,000, if greater solubility of the polymeric dispersant is desired.

With respect to the wt% of polymeric dispersant, chen teaches in the general disclosure that dispersant is present in amount greater than 5% by weight based on the anionic water-soluble or water-swellaable polymer (col. 9, lines 5-7) but less than 20% by weight (col. 9, lines 16-20). Practically, the amount of anionic polymer in the aqueous dispersion is about 75% or less. Therefore, in light of the general teachings in Chen, it would have been obvious to one skilled in art at the time invention was made to use dispersant in amounts of from 5 to 20% by weight based on 75% by weight of anionic water-soluble or water-swellaable polymer (i.e. about 4% to about 15% by weight based on aqueous dispersion), absent evidence of unexpected results.

### ***Response to Arguments***



Art Unit: 1764

11. The objections, and rejections under 35 U.S.C. 112 second paragraph and 103 as set forth in paragraphs 2, 4, 7-8 in the preceding office action mailed 2/1/2010 are hereby overcome in light of the amendments and applicant's arguments filed 8/23/2010.
12. Applicant's arguments filed 8/23/2010 have been fully considered but they are not persuasive. Specifically, applicant argues that (A) use of the term independently and the grouping of alkyl and hydroxyalkyl radicals as species which may be encompassed by  $R^2$  and  $R^3$  conveys to one skilled in art that the alkyl and/or the hydroxyalkyl radical contain from 1 to 5 carbon atoms; (B) example 18 is inventive and adheres to the present claim that more than 5 wt% of a first portion of the polymeric dispersing agent is added during polymerization and yields a polymeric dispersion having advantageous viscosity and stability problems; (C) Hurlock describes a stabilizer which may be up to 20 mole% of an ionic monomer unit, whereas the instant claims require the dispersing agent to contain at least 30% by weight of anionic monomer; (D) nothing in cited art suggests the use of two-stage addition of polymeric dispersant which forms a polymer dispersion having substantially improved viscosity and storage stability properties.

With respect to (A) limitation in claim 37 reads " $R^2$  and  $R^3$  independently stand for hydrogen, or an alkyl or hydroxyalkyl radical containing from 1 to 5 carbon atoms. Hence, it is clear that alkyl and hydroxyalkyl are recited alternatively and not used in conjunction (i.e. as a group).

With respect to (B), process steps recited in instant claim 25 do not require the addition of at least 5% by weight and is present in the final dispersion. In addition, even if it were required in the polymerization process, the showing of unexpected results is not commensurate with scope of instant claims. Inventive example uses only one polymeric

Art Unit: 1764

dispersant (i.e. potassium polyacrylate) and is used in the polymerization of acrylamide and acrylic acid.

With respect to (C), applicant's attention is drawn to Hurlock et al, wherein it states - in preferred embodiments stabilizer is poly(acrylic acid) (col. 7, lines 23-25). Hence, it is clear that the stabilizer can comprise 100% by weight of anionic monomer.

With respect to (D), Graham v. Deere analysis was done and secondary reference of Aydin et al was brought in to teach the addition of polymeric dispersant after polymerization. Aydin et al states - completion of the actual polymerization is followed by customary measures of post-stabilization, including the subsequent addition of surface active substances (col. 10, lines 12-18).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

Art Unit: 1764

advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./  
Examiner, Art Unit 1764

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1764